

GOOD HELP

Tina Cohen

Certified Arborist

EXCERPT

KLING L
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8318 26th Avenue NW • Seattle, Washington 98117

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August 18, 1999

Carol Baker

Don Ganchorre

Seattle Dept of Parks & Recreation

100 Dexter Ave. N.

Seattle, WA 98409-5199

Re: Volunteer Park Off-leash Dog Area

Recommendations for Improving Tree Health

On July 19, 1999 trees in the off-leash area were observed to determine their vigor and to make recommendations. Soil and tissue samples were submitted by arborist Brian Gilles to Ribeiro Plant Lab. My report uses these results rather than duplicating the tests.

Highlights of Lab Report:

1. The levels of Phytophthora were quite low, although the higher Phythium level indicates root die-back. Phytophthora may be low due to the time of year. The fungus seems to go into 'remission' as the soil dries out.

There are dying conifers, mostly Lawson cypress, up hill from this area. The sequoia adjacent to the art museum, between the infected Lawson cypresses and the off-leash area, has flowered very heavily. This may be a stress response from the Phytophthora. Please see attached photo. The trees inside the off leash area were not symptomatic.

2. Mites are fairly typical on conifers especially as the weather gets drier. Their damage when extreme can be mistaken for root rot, except the branches will continue to grow.

3. The nutrient analysis was not too surprising. The soil pH is rather acidic, therefore



the calcium, and magnesium were low. I'm not sure why the potassium is low, as it is immobile in the soil. The adequate nitrate level is consistent with a fertilized lawn. High iron may be the result of moss control products. If none have been used, then this is an unexpected reading.

If the high volume of dog urine were a problem, I would expect higher soluble salts and nitrate levels.

4. Dr. Ribeiro's comments include the suggestion that compaction is one of the causes of the tree stress. We knew this to be the case in a heavily used park.

Recommendations:

1. Rest & Aeration: It would benefit both the trees and the lawn if the off-leash area rotated locations, so the soil could have a minimum 4 month rest.

Applications: During that time, the area should be closed off and aerated. Apply dolomite lime to raise the pH; at the same time lime adds calcium and magnesium.

The tree root zones should be given a soil injected application of mycorrhizal fungi inoculants plus a beneficial bacterial inoculant. These inoculants stimulate root growth and, according to the manufacturer, the bacteria will inhibit Phytophthora.

Plant Health Care Inc, 800-421-9051, markets these products as 'MycorTree

Injectable and Compete

Web: <http://www.planthealthcare.com>

2. Water: Be sure this area is not over irrigated. Check that the sprinklers do not wet the trunks.

If standing water occurs in the rainy season, install drain tiles. Use caution not to impact root zones.

3. Fencing off trees: When the area is reopened, fence off groups of trees and individual trees (ideally) to approximately 5 feet beyond their drip lines. This will discourage dogs and their owners from further compacting the root zones. The top of the fence should be designed to deflect balls. Perhaps a decorative iron fence would be consistent with the look of the conservatory and museum. Or perhaps it could be an art project.

4. Mulch: According to Dr. Ribeiro, "Mulching with coarse material such as bark chips help reduce the incidence of Phytophthora infection. Pine needles increase the disease." Therefore use only large 3 inch chips and apply them rather shallow, not over 2 inches in depth. Extend the mulch past the drip line by at least 5 feet.

5. Insects on Spruce: The aphid and mite damage to the blue spruce is typical for

this species. Due to heavy use of the area, insecticide spray applications are not practical, plus they will negatively impact beneficial insects. If budget allows, a trunk injection of Merit (imidacloprid) would control the aphids. This needs to be done in December to allow uptake; follow all label directions. Good cultural practices, keeping the spruce well watered and reducing compaction, will improve vigor so it can grow out of the damage.

6. Pruning: Dead wood and broken branches should be removed from the sequoias and others as needed. The Cryptomeria would benefit from being cleaned of its dead foliage. No other pruning is needed.

7. Other New Plants: An alternative or adjunct to fencing is to plant lower story spiny shrubs just outside of the drip line, such as evergreen barberry or porcupine holly. Install one gallon size in order to avoid excessive digging in the tree root zones.

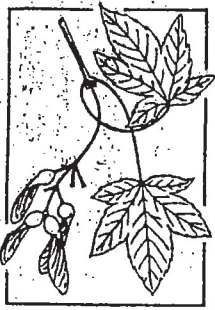
Please feel free to call me if there are any questions or if I can provide additional information.

Thank you,



Tina Cohen
Certified Arborist PN0245

encl.



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Addendum: Applications

The technical support department at Plant Health Care Inc clarified the application techniques. I spoke with Dr. Kernan, 1-800-421-9051 x 103:

Aerate (also called vertimulching) and apply the mycorrhiza at the same time: Scoop out 3 oz of the granular formulation MycorTree "Rootsaver" onto the soil and then drill thru it to incorporate. Start approximately half way to the drip line to avoid large surface roots and work outward to double the extent of the drip line. The core holes are to be 2 1/2 to 3 inches diameter; 8 to 10 inches depth; placed one every 2 1/2 feet.

"Compete" is best applied as a drench over the root zone. They recommend mixing it with a wetting agent called "Yuccah" which also has a Phytophthora inhibiting action. This would be applied after aeration.

MycorTree "Injectable" is applied with an injection rod and does not significantly aerate the soil. "Compete" can be mixed in and applied at the same time.





Brian K. Gilles

Hazardous Tree Evaluations
Woodlot Mangement
Tree Consulting



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EXCERPT

August 26, 1999

Carol Baker and Dan Ganchoree,
Volunteer Park Maintenance
Seattle Parks and Recreation Department
1400 East Galer
Seattle, WA 98112

**Subject: Evaluation and Report of Trees in the "Dog Off-Leash Area" of
Volunteer Park**

Dear Carol and Dan:

Thank you for the opportunity for Gilles Consulting to offer a professional evaluation and recommendation for the trees that are under stress in Volunteer Park. It is good that you called. You were very observant to notice such widespread and extensive decline in the large stately trees of the area.

In assessing the trees, I followed the protocol of the International Society of Arboriculture for Hazard Tree Assessment. As you aware, this is a scientifically based process to look at the entire site, the surrounding land and the soil, as well as a complete look at the tree itself. In examining the trees, I looked at factors such as: size, vigor, live crown ratio and class, density of needles, past injury and the tree's response to callusing over wounds, insect activity, root damage and root collar health, crown health, evidence of disease, dead wood and hanging limbs. While no one can predict with absolute certainty which trees will or will not fall, we can, by using this scientific process, assess which trees are most likely to fail and take appropriate action to minimize injury and damage.

With so many trees showing symptoms of stress and the Phytophthora at the top of the hill, I wanted to do a thorough investigation. To minimize costs, I took soil and foliage samples from those trees that were the most stressed and sent them to a pathology lab for testing. I had one soil sample tested for tree nutrition. As you know, tree nutritional requirements differ from grass requirements.

What follows is my report of the signs, symptoms and conditions of each tree, followed by recommendations for their long-term care. I recommend that we set up a time to meet once you have had a chance to review this report. Although I tried to be thorough,



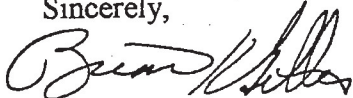
comprehensive, and direct in this report, it is possible that some points will require clarification or further information. You may want to pursue some investigation to gather more data specific to certain areas of interest to you.

Also, this report can serve to document the trees in their current condition. This report can be used as a historical record in the future, a benchmark if you will, from which to evaluate the success or failure of the treatments or actions taken. The signs, symptoms, and conditions of today can be compared to future evaluations. This will be a significant resource from which to evaluate these valuable trees and to make future decisions.

I numbered each tree on site to correspond to the attached map that you mailed to me.

Please call me at your convenience to set up a time for us to get together.

Sincerely,



Brian K. Gilles, Certified Arborist
PNW-0260

Enclosures:

Tree Analysis Report and Recommendations
Plant Pathology Analysis Report from Ribeiro Plant Lab
Soil Nutrition Analysis Report from MDS Harris Labs

GENERAL SITE NOTES OF SIGNS, SYMPTOMS AND INDICATORS:

SITE CONDITIONS:

- The trees are growing in a park area that is managed as a lawn. The area receives extensive use from visitors, mostly with dogs.
- The area has a gentle slope from the museum down to 15th Street.
- The irrigation is inadequate for the needs of the trees—although irrigated regularly for the grass, the water is not penetrating down past the grass roots to the depth of the tree roots.
- The soil, although recently aerated, is still compacted—which further contributes to a drought like condition for the tree roots.
- Most trees have a wet line at approximately 24 to 30 inches—below which the bark is saturated with dog urine:
 - The urine is so strong under some trees that it is hard to breathe at certain times.
 - The bark in this “Urine Wet Zone,” (UWZ,) is soft and spongy, which is conducive to bacterial and fungal growth.
- Soil tests revealed: Pythium, Phytophthora, Fusarium, and Parasitic Nematodes.
- Nutrient analysis revealed conditions that are not conducive to optimum tree growth:
 - High levels of Phosphorous, Zinc, Manganese and Iron,
 - Near excessive levels of Nitrogen,
 - Low levels of Potassium, Magnesium, Calcium and Boron,
 - A pH of 4.5—far too acidic for optimal nutrient absorption by the trees. (Although the micro-nutrients and minerals are in the soil they are not absorbed at this low/acidic pH.)
 - Little pH buffering capacity of the soil, meaning that the soil has little capacity to absorb, retain or “manage” changes in pH, thus affecting the ability of trees to absorb nutrients.
- Soil tests yielded a surprisingly low level of sodium and soluble salts. Given the number of dogs using the area I expected to see much higher levels.
- Most of the trees were heavily infested with spider mites.

GENERAL CONCLUSIONS:

- All the trees are suffering from compaction.
- Irrigation water is not reaching the tree roots.
- Urea fertilizer promotes Fusarium root rot, which was found on the site. Therefore, it will be important to manage the nitrogen application carefully. The disease is managed in part by regulating nitrogen sources and applying only the minimum necessary for healthy grass. Switching to the slowest release nitrogen lawn fertilizer will be important for long term tree health.
- Injecting the tree roots with a fertilizer product formulated specifically for tree growth will enhance their overall health.
- Injecting the roots of the stressed trees with mycorrhizal fungi will improve the tree's ability to take water and nutrients thus improving overall health.
- The trunks of the trees must be kept dry from the strong canine urine.
- To alleviate the soil compaction :
 - The area should be aerated twice per year to a depth of 10 to 14 inches. (Care must be taken to minimize damage to tree roots and irrigation heads and pipes.)
 - The area around the trees should be fenced off at least at the dripline; an additional 10 to 20 feet would be best for the long-term health of the trees.
- Treating the Phytophthora, Fusarium, and Pythium with strong fungicide is warranted on specific trees, such as #'s 1, 5, & 11.
- Controlling the mites and other foliar insect pests for the next several years will be an important step toward promoting good health. Because this is a heavily used park, I recommend that a less toxic method or combination of methods be used, such as horticultural oils and insecticidal soap. This combination will have a significant impact on the insect infestation with the minimal impact on park visitors and their pets. This also has the net effect of generating public support and good will toward your management/control program when the public realizes that you are taking reasonable and prudent steps in an environmentally sensitive manner.

GENERAL PARK RECOMMENDATIONS:

1. To protect the tree trunk and root crown from further decline and infection, the dogs must be kept from urinating on the tree trunks:
 - At a minimum, barriers must be placed around the base of each tree at least 3 to 5 feet from the trunks.
2. To alleviate the severe compaction of the soils, the trees should be fenced outside the driplines:

- The areas inside the fence should be aerated to a depth of 12 to 14 inches, (such as with a Vertidrain brand aerator.)
 - The area inside the fence should be mulched with 2 to 3 inches of chips, bark mulch, compost, hog fuel or similar materials.
3. To stimulate tree health and root growth, the root zones should be injected with a combination of specialized tree fertilizer and mycorrhizal fungi.
 4. To counteract the effects of high nitrogen and salt in the soils, increase the irrigation around the trees:
 - This will need to be done so as not to over water the turf, but enough to wash away the salts and nitrogen,
 - Enough irrigation to get the water down to the tree roots below the grass roots. Infrequent deep watering will be more successful.
 5. Spider mites thrive in damp and wet conditions. The 1998/99 winter was the wettest winter in the history of record keeping in the region. It is not surprising that these trees, already stressed, became heavily infected. Making mite control in the form of oil sprays and insecticidal soaps, a regular part of the annual park maintenance will be imperative.
 6. Consider rotating the Dog Off-Leash Area around the park or to other parks to give the soil and roots time to recover.

WAIVER OF LIABILITY:

This evaluation represents the tree health assessment at this point in time. My findings do not guarantee future safety nor are they predictions of future events.